

## **APPENDIX 8.2**

### **Statistical Summary Tables**

**TABLE 8.2.1**  
**STATISTICAL SUMMARY TABLE - SOIL - 0-5 FEET DEPTH INTERVAL**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)		Average Concentration <sup>1</sup> (mg/kg)	Standard Deviation <sup>1</sup> (mg/kg)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM) <sup>1,2</sup>	EPC <sub>s</sub> (mg/kg) <sup>3</sup>
				Minimum	Maximum				
<b>Organics</b>									
Anthracene	1	9	11%	0.0043	-	0.0043	0.0013	0.0010	1.98E-03
Benzo(a)anthracene	1	9	11%	0.02	-	0.02	0.0043	0.0055	7.68E-03
Benzo(a)pyrene	1	9	11%	0.027	-	0.027	0.0050	0.0077	9.75E-03
Benzo(a)pyrene Equivalent	10	10	100%	0.0032	-	0.033	0.0062	0.0093	1.16E-02
Benzo(b)fluoranthene	2	9	22%	0.003	-	0.024	0.0037	0.0072	8.15E-03
Benzo(ghi)perylene	1	9	11%	0.037	-	0.037	0.0069	0.0106	1.34E-02
Benzo(k)fluoranthene	1	9	11%	0.009	-	0.009	0.0018	0.0025	3.37E-03
Chrysene	1	9	11%	0.02	-	0.02	0.0043	0.0055	7.68E-03
Dibenz(a,h)anthracene	1	9	11%	0.018	-	0.018	0.0095	0.0030	1.13E-02
Fluoranthene	1	9	11%	0.035	-	0.035	0.0058	0.0103	1.21E-02
Phenanthrene	1	9	11%	0.014	-	0.014	0.0032	0.0038	5.55E-03
Pyrene	1	9	11%	0.039	-	0.039	0.0084	0.0108	1.51E-02
<b>Inorganics</b>									
Antimony	6	14	43%	0.6	-	1.5	0.57	0.42	7.64E-01
Arsenic	12	14	86%	0.4	-	7.7	2.13	2.27	3.21E+00
Barium	14	14	100%	12.1	-	417.0	96.69	101.91	1.45E+02
Chromium	14	14	100%	3.7	-	34.4	15.83	9.02	2.01E+01
Hexavalent Chromium	10	10	100%	0.2	-	0.8	0.34	0.16	4.30E-01
Cobalt	14	14	100%	1.2	-	13.0	6.71	3.45	8.34E+00
Copper	14	14	100%	0.8	-	47.7	13.41	12.51	1.93E+01
Lead	14	14	100%	0.5	-	17.9	8.03	4.95	1.04E+01
Molybdenum	5	14	36%	0.5	-	1.6	0.51	0.46	7.28E-01
Nickel	14	14	100%	1.5	-	13.4	7.84	3.63	9.56E+00
Vanadium	14	14	100%	6.6	-	76.6	36.61	21.67	4.69E+01
Zinc	14	14	100%	6.0	-	193.0	45.86	45.73	6.75E+01

**Abbreviations:**

BGS = Below ground surface

EPC<sub>s</sub> = Exposure point concentration in soil

mg/kg = Milligrams per kilogram

NA = Not applicable, number of samples not adequate to determine UCLM

UCLM = Upper confidence limit of the arithmetic mean

--" = Not available

**Notes:**

<sup>1</sup> 1/2 PQL values used for analytical results PQL.

<sup>2</sup> Data assumed normal. 95% UCLM calculated as follows:  $UCL_{1-\alpha} = \text{Average Concentration} + t_{\alpha, n-1} S / \sqrt{n}$  (USEPA, 2002)

<sup>3</sup> EPC is lesser of maximum concentration and 95% UCLM.

**TABLE 8.2.2**  
**STATISTICAL SUMMARY TABLE - SOIL - 0-10 FEET DEPTH INTERVAL**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)		Average Concentration <sup>1</sup> (mg/kg)	Standard Deviation <sup>1</sup> (mg/kg)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM) <sup>1,2</sup>	EPC <sub>s</sub> (mg/kg) <sup>3</sup>
				Minimum	- Maximum				
<b>Organics</b>									
1,4-Dichlorobenzene	2	6	33%	0.101	- 0.56	0.1440	0.2070	3.14E-01	3.14E-01
2-Methylnaphthalene	1	6	17%	0.327	- 0.327	0.0966	0.1168	1.93E-01	1.93E-01
Anthracene	1	15	7%	0.0043	- 0.0043	0.0249	0.0408	4.34E-02	4.30E-03
Benzo(a)anthracene	3	15	20%	0.02	- 0.411	0.0532	0.1086	1.03E-01	1.03E-01
Benzo(a)pyrene	2	15	13%	0.027	- 0.037	0.0240	0.0291	3.72E-02	3.70E-02
Benzo(a)pyrene Equivalent	16	16	100%	0.00323	- 0.204	0.0434	0.0607	7.00E-02	7.00E-02
Benzo(b)fluoranthene	4	15	27%	0.003	- 0.345	0.0506	0.0979	9.51E-02	9.51E-02
Benzo(ghi)perylene	1	15	7%	0.037	- 0.037	0.0232	0.0291	3.64E-02	3.64E-02
Benzo(k)fluoranthene	2	15	13%	0.009	- 0.645	0.0572	0.1594	1.30E-01	1.30E-01
Bis(2-ethylhexyl)phthalate	2	6	33%	0.16	- 0.827	0.1986	0.3124	4.56E-01	4.56E-01
Butyl Benzyl Phthalate	3	6	50%	0.021	- 3.579	0.9512	1.4860	2.17E+00	2.17E+00
Chrysene	4	15	27%	0.02	- 0.891	0.0958	0.2251	1.98E-01	1.98E-01
Dibeno(a,h)anthracene	1	9	11%	0.018	- 0.018	0.0095	0.0030	1.13E-02	1.13E-02
Dibutylphthalate	1	6	17%	0.154	- 0.154	0.0681	0.0518	1.11E-01	1.11E-01
Dioctylphthalate	2	6	33%	0.008	- 0.195	0.0751	0.0656	1.29E-01	1.29E-01
Diphenylamine	6	6	100%	0.012	- 1.96	0.6537	0.7126	1.24E+00	1.24E+00
Fluorene	2	6	33%	0.232	- 0.578	0.1604	0.2195	3.41E-01	3.41E-01
Fluoranthene	2	15	13%	0.035	- 0.352	0.0414	0.0876	8.12E-02	8.12E-02
Phenanthrene	3	14	21%	0.014	- 1.158	0.1378	0.3444	3.01E-01	3.01E-01
Pyrene	2	15	13%	0.039	- 0.352	0.0399	0.0856	7.88E-02	7.88E-02
4,4-DDD	2	6	33%	0.0086	0.0152	0.0063	0.0048	1.03E-02	1.03E-02
4,4-DDE	2	6	33%	0.0184	0.0195	0.0087	0.0080	1.52E-02	1.52E-02
Aldrin	1	6	17%	0.0623	0.0623	0.0129	0.0242	3.28E-02	3.28E-02
alpha-BHC	2	6	33%	0.0113	0.0172	0.0068	0.0061	1.18E-02	1.18E-02
alpha-Endosulfan I	2	6	33%	0.009	0.0596	0.0138	0.0226	3.23E-02	3.23E-02
Beta-Endosulfan	1	6	17%	0.01	0.01	0.0050	0.0024	7.02E-03	7.02E-03
Dieldrin	1	6	17%	0.0666	0.0666	0.0140	0.0258	3.52E-02	3.52E-02
Heptachlor	1	6	17%	0.0523	0.0523	0.0112	0.0201	2.78E-02	2.78E-02

**TABLE 8.2.2**  
**STATISTICAL SUMMARY TABLE - SOIL - 0-10 FEET DEPTH INTERVAL**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)		Average Concentration <sup>1</sup> (mg/kg)	Standard Deviation <sup>1</sup> (mg/kg)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM) <sup>1,2</sup>	EPC <sub>s</sub> (mg/kg) <sup>3</sup>
				Minimum	- Maximum				
<b>Inorganics</b>									
Antimony	12	34	35%	0.6	- 6.2	0.78	1.13	1.11E+00	1.11E+00
Arsenic	29	34	85%	0.4	- 60.4	6.33	12.53	9.97E+00	9.97E+00
Barium	34	34	100%	12.1	- 417.0	114.46	90.62	1.41E+02	1.41E+02
Beryllium	3	34	9%	0.1	- 1.0	0.28	0.15	3.21E-01	3.21E-01
Cadmium	5	34	15%	0.1	- 2.4	0.34	0.38	4.55E-01	4.55E-01
Chromium	34	34	100%	3.7	- 140.0	27.16	25.76	3.46E+01	3.46E+01
Hexavalent Chromium	10	12	83%	0.2	- 0.8	0.29	0.18	3.85E-01	3.85E-01
Cobalt	34	34	100%	1.2	- 36.0	10.35	7.38	1.25E+01	1.25E+01
Copper	34	34	100%	0.8	- 377.0	28.49	62.83	4.67E+01	4.67E+01
Lead	34	34	100%	0.5	- 132.0	13.68	24.52	2.08E+01	2.08E+01
Mercury	3	34	9%	18.0	- 2917.0	147.50	605.11	3.23E+02	3.23E+02
Molybdenum	13	34	38%	0.5	- 2.8	0.83	0.80	1.06E+00	1.06E+00
Nickel	34	34	100%	1.5	- 72.8	13.36	13.57	1.73E+01	1.73E+01
Silver	3	34	9%	0.1	- 1.6	0.30	0.24	3.70E-01	3.70E-01
Vanadium	34	34	100%	6.6	- 146.0	51.46	32.98	6.10E+01	6.10E+01
Zinc	34	34	100%	6.0	- 1387.0	124.77	305.59	2.13E+02	2.13E+02

**Abbreviations:**

BGS = Below ground surface

mg/kg = Milligrams per kilogram

UCLM = Upper confidence limit of the arithmetic mean

EPC<sub>s</sub> = Exposure point concentration in soil

NA = Not applicable, number of samples no "--" = Not available

**Notes:**

<sup>1</sup> 1/2 PQL values used for analytical results. Statistical calculations utilized sample statistics rather than population statistics.

<sup>2</sup> Data assumed normal. 95% UCLM calculated as follows:  $UCL_{1-\alpha} = \text{Average Concentration} + t_{\alpha, n-1} S / \sqrt{n}$  (USEPA, 2002)

<sup>3</sup> EPC is lesser of maximum concentration and 95% UCLM.

**TABLE 8.2.3**  
**STATISTICAL SUMMARY TABLE - NEAR-SURFACE SOIL VAPOR SAMPLES**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations ( $\mu\text{g}/\text{m}^3$ )		Average Detected Concentration <sup>1</sup> ( $\mu\text{g}/\text{m}^3$ )	Standard Deviation of Detected Concentrations <sup>1</sup> ( $\mu\text{g}/\text{m}^3$ )	95% Upper Confidence Limit on the Arithmetic Mean (UCLM) <sup>1,2</sup>	EPC <sub>s</sub> ( $\mu\text{g}/\text{m}^3$ ) <sup>3</sup>
				Minimum	- Maximum				
<b>Organics</b>									
1,2-Dichlorobenzene	8	10	80%	80	- 236	171	82	2.19E+02	2.19E+02
1,4-Dichlorobenzene	7	10	70%	50	- 2,787	782	944	1.33E+03	1.33E+03
2-Butanone (MEK)	1	10	10%	150	- 421	248	105	3.09E+02	3.09E+02
Acetone	10	10	100%	329	- 1,695	790	437	1.04E+03	1.04E+03
Bromodichloromethane	1	10	10%	89	- 89	89	--	NA	8.87E+01
Chlorobenzene	4	10	40%	84	- 258	141	79	1.87E+02	1.87E+02
Chlorodifluoromethane	6	10	60%	28	- 1,240	355	503	6.46E+02	6.46E+02
Chloroform	2	10	20%	274	- 448	361	123	4.32E+02	4.32E+02
Dichlorodifluoromethane	3	10	30%	73	- 2,217	1,175	1,073	1.80E+03	1.80E+03
Dichlorofluoromethane	1	10	10%	4,433	- 4,433	4,433	--	NA	4.43E+03
Ethylbenzene	3	10	30%	115	- 3,363	1,039	1,499	1.91E+03	1.91E+03
Trichloroethene	7	10	70%	83	- 83	83	--	NA	8.32E+01
Vinyl chloride	10	10	100%	63	- 169	118	47	1.46E+02	1.46E+02
Total Xylenes	9	10	90%	279	- 10,245	3,703	4,338	6.22E+03	6.22E+03

**Abbreviations:**

ppmv = parts per million volume

UCLM = Upper confidence limit of the arithmetic mean

EPC<sub>s</sub> = Exposure point concentration in soil vapor

**Notes:**

<sup>1</sup> 1/2 PQL values used for analytical results.

<sup>2</sup> Data assumed normal. 95% UCLM calculated as follows:  $UCL_{1-\alpha} = \text{Average Concentration} + t_{\alpha, n-1} S / \sqrt{n}$  (USEPA, 2002)

<sup>3</sup> EPC is lesser of maximum concentration and 95% UCLM. Based on OEHHA comments (May 14, 2005), detected concentrations of each contaminant multiplied by number of composite samples.

**TABLE 8.2.4**  
**STATISTICAL SUMMARY TABLE- GROUNDWATER**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)		Average Concentration <sup>1</sup> (mg/L)	Standard Deviation <sup>1</sup> (mg/L)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM) <sup>1,2</sup>	EPC <sub>GW</sub> (mg/L) <sup>3</sup>
				Minimum	- Maximum				
<b>Organics</b>									
1,2-Dichloropropane	6	74	8%	3.40E-07	- 5.10E-07	2.03E-07	1.46E-07	2.32E-07	<b>2.32E-07</b>
1,4-Dichlorobenzene	7	74	9%	4.60E-07	- 4.60E-06	2.89E-07	5.81E-07	4.02E-07	<b>4.02E-07</b>
Benzene	3	74	4%	2.00E-07	- 2.70E-07	1.71E-07	1.42E-07	1.98E-07	<b>1.98E-07</b>
cis-1,2-Dichloroethene	6	74	8%	2.00E-06	- 6.41E-06	5.58E-07	1.14E-06	7.79E-07	<b>7.79E-07</b>
Diethyl Ether	29	63	46%	4.10E-07	- 2.16E-06	6.12E-07	5.52E-07	7.28E-07	<b>7.28E-07</b>
Methylene Chloride	20	74	27%	3.10E-07	- 1.36E-06	6.31E-07	8.19E-07	7.90E-07	<b>7.90E-07</b>
Toluene	7	74	9%	3.30E-07	- 1.45E-06	3.00E-07	3.31E-07	3.64E-07	<b>3.64E-07</b>
Methyl Tert-Butyl Ether	1	74	1%	1.26E-05	- 1.26E-05	5.47E-07	1.44E-06	8.26E-07	<b>8.26E-07</b>
Vinyl Chloride	4	74	5%	4.20E-07	- 9.60E-07	4.21E-07	4.69E-07	5.12E-07	<b>5.12E-07</b>

**Abbreviations:**

EPC<sub>GW</sub> = Exposure point concentration in groundwater

UCLM = Upper confidence limit of the arithmetic mean

NA = Not applicable, number of samples not adequate to determine UCLM

-- = Not applicable

µg/L = Micrograms per liter

**Notes:**

<sup>1</sup> 1/2 PQL values used for analytical results below PQL. Statistical calculations utilized sample statistics rather than population statistics.

<sup>2</sup> Data assumed normal. 95% UCLM calculated as follows:  $UCL_{1-\alpha} = \text{Average Concentration} + t_{\alpha, n-1} S / \sqrt{n}$  (USEPA, 2002).

<sup>3</sup> EPC determined to be lesser of maximum concentration and 95% UCLM.

**TABLE 8.2.4**  
**STATISTICAL SUMMARY TABLE- GROUNDWATER**  
**MISSION BAY LANDFILL**  
**SEA WORLD DRIVE**  
**SAN DIEGO, CALIFORNIA**

Constituent	# of Detections	# of Samples	Frequency of Detection (FOD)	Range of Detected Concentrations (mg/kg)		Average Concentration <sup>1</sup> (mg/L)	Standard Deviation <sup>1</sup> (mg/L)	95% Upper Confidence Limit on the Arithmetic Mean (UCLM) <sup>1,2</sup>	EPC <sub>GW</sub> (mg/L) <sup>3</sup>
				Minimum	- Maximum				
<b>Inorganics</b>									
Antimony	17	19	89%	0.0001	- 0.01	6.67E-03	1.55E-02	1.28E-02	1.00E-02
Arsenic	60	75	80%	0.00007	- 0.0196	5.19E-03	4.74E-03	6.10E-03	6.10E-03
Barium	19	19	100%	0.050	- 4.9	6.03E-01	1.15E+00	1.06E+00	1.06E+00
Beryllium	10	12	83%	0.00000	- 0.00006	1.01E-05	1.72E-05	1.90E-05	1.90E-05
Cadmium	12	12	100%	0.00001	- 0.00035	1.01E-04	1.12E-04	1.59E-04	1.59E-04
Hexavalent Chromium	0	10	0%	0.00000	- 0.00000	5.00E-04	0.00E+00	5.00E-04	0.00E+00
Chromium	29	75	39%	0.00013	- 0.164	9.80E-03	2.49E-02	1.46E-02	1.46E-02
Cobalt	12	12	100%	0.00075	- 0.019	5.88E-03	5.48E-03	8.72E-03	8.72E-03
Copper	12	12	100%	0.00012	- 0.022	3.27E-03	6.50E-03	6.64E-03	6.64E-03
Iron	5	7	71%	0.59	- 1.38	6.14E-01	4.75E-01	9.63E-01	9.63E-01
Lead	14	19	74%	0.00001	- 0.07	4.64E-03	1.61E-02	1.10E-02	1.10E-02
Mercury	12	12	100%	0.00000	- 0.00011	1.18E-05	3.11E-05	2.80E-05	2.80E-05
Molybdenum	19	19	100%	0.00056	- 1.04	1.05E-01	2.33E-01	1.98E-01	1.98E-01
Nickel	19	19	100%	0.00038	- 0.067	1.13E-02	1.58E-02	1.76E-02	1.76E-02
Selenium	14	19	74%	0.00009	- 0.02	3.80E-03	6.62E-03	6.44E-03	6.44E-03
Silver	3	17	18%	0.00003	- 0.00227	4.32E-04	8.66E-04	7.98E-04	7.98E-04
Thallium	0	52	0%	0.00000	- 0.00000	3.37E-04	4.17E-04	4.33E-04	0.00E+00
Vanadium	11	19	58%	0.00683	- 0.08	2.63E-02	2.86E-02	3.77E-02	3.77E-02
Zinc	18	19	95%	0.00212	- 13.6	7.58E-01	3.11E+00	2.00E+00	2.00E+00

**Abbreviations:**

EPC<sub>GW</sub> = Exposure point concentration in groundwater

UCLM = Upper confidence limit of the arithmetic mean

NA = Not applicable, number of samples not adequate to determine UCLM

"--" = Not applicable

µg/L = Micrograms per liter

**Notes:**

<sup>1</sup> 1/2 PQL values used for analytical results below PQL. Statistical calculations utilized sample statistics rather than population statistics.

<sup>2</sup> Data assumed normal. 95% UCLM calculated as follows:  $UCL_{1-\alpha} = \text{Average Concentration} + t_{\alpha, n-1} S / \sqrt{n}$  (USEPA, 2002).

<sup>3</sup> EPC determined to be lesser of maximum concentration and 95% UCLM.